

# Weed Workshop



## March 2011

Presented by Peter Ellmer



## Profile Sheet

Common Name:

## Fishbone Fern & Boston Fern

- Botanical Name:** Nephrolepis cordifolia- Fishbone Fern  
Nephrolepis exaltata – Boston Fern
- Family:** - Davalliaceae
- Status:** - Garden escape
- Habit:** - Fishbone - Erect spreading fern to 70cm  
- Boston – Erect spreading fern to 100cm
- Life Cycle:** - Perennial
- Flowering period:** -
- Description:** - Fern with erect yellow/green fronds to 100cm, spreading over large areas from creeping rhizomes
- Leaves** - Fronds, linear in online, smooth except for rough stem, divided in segments (5cm) down to midrib, margin toothed or lobed, pale green, heart shaped segment base
- Flowers** - Nil
- Fruit** - Sori – Spore forming structure covered with kidney shaped tissue (indusia) on lower surface, half way between mid-vein and margin.
- Stems** - Stalks and midrib pale brown, easily broken
- Roots** - Fishbone - Wiry, creeping stolons that bear hairy fleshy spherical tubers & short rhizomes  
- Boston – No hairy tubers
- Preferred location:** - Moist situation, bushland drains, creeks, runoff areas
- Dispersal:** - Garden escape or dumping
- Distribution:** - Widespread
- Similar Species:** - *Doodia aspera* (Rasp Fern), *Pellaea falcate* (Sickle Fern)
- References:**

Spencer. R (1995) Horticultural Flora of South-East Australia - Ferns, Conifers & Their Allies Pg68

F.J & R.G Richardson, R.C.H Shepherd( 2006) *Weeds of the South-East* Pg 3



Nephrolepis cordifolia



N. cordifolia- indusia & Pallaea falcate spores



Fishbone Fern –tubers, fronds + rhizomes



Doodia aspera



## Profile Sheet

Common Name:	<b><u>Ehrharta/ Panic Veldgrass</u></b>
Botanical Name:	<i>Ehrharta erecta</i>
Family:	- Poaceae (Monocot- Grass Family)
Status:	- Environmental Weed (Origin-Southern Africa)
Habit:	- Soft clumping grass to 50cm, <b>lime green</b>
Life Cycle:	- Perennial – 10 weeks – germination to seed set. <b>Seed set 4-6 weeks</b> after disturbance (cool fire)
Flowering period:	- <b>Any time</b> , peak spring early summer
Description:	- Lime green, tufted, short rhizome grass to 50cm with soft drooping leaves and inflorescences that is erect and compact before becoming well-spaced slender branches
Leaves	- Lime green, <20cm long & 2-10mm wide, soft, drooping with age, older leaves commonly blotched or bleached
Flowering stems	- 10-40cm, initially compact & narrow then spreading, branches well spread
Fruit	- Grain, 3mm, oval, awnless. <b>Seed viability close to 100%</b> . Most germinate within 12 months
Stems	- Leaf sheath almost split entire length, keeled on back, smooth
Roots	- Fibrous, shallow, short rhizome (shallow)
Preferred location:	- Moist well drained sites-lighter soils (sandy), shaded conditions
Dispersal:	- Large seed set, rhizomes, water, birds, mowing, contaminate of soil/garden refuse
Distribution:	- Widespread
Similar Species:	- <i>Mircolaela stipoides</i> (Weeping Meadow Grass); <i>Entolasia marginata</i> – seed head tighter, leaves at right angles

### References:

F.J. & R.G. Richardson, R.C.H. Shepherd (2006) *Weeds of the South-East* Pg59  
A. Muys (2001) *Bush Invaders of the South-East of Australia*. Pg66  
C.A. Lamp, S.J. Forbes & J.W. Cade (2001) *Grasses of Temperate Australia*, Pg 156



*Ehrharta erecta* – seedhead



*Ehrharta* habit



*Mircolaela stipoides*



## Profile Sheet

Common Name:

## Wandering Jew, Trad

Botanical Name:

*Tradescantia fluminensis*

Family:

- Commelinaceae

Status:

- Environmental Weed, Garden escape  
(Origin - South America)

Habit:

- Trailing prostrate, perennial succulent herb

Life Cycle:

- Perennial - Monocotyledon

Flowering period:

- Summer

Description:

- Soft creeping, succulent dark green herb that roots at nodes and fragments easily. Forms dense mats that restricts or stops native germination.

Leaves

- Alternate, oval, glossy with a translucent sheath at base

Flowers

- 3 White-tepals & 3 green tepals (10mm) on stalks and in clusters (15-20) at top of stems

Fruit

- Papery capsule usually containing 6 seeds that are non viable. Does not set seed in Aust

Stems

- Soft, decumbent, trailing, rooting at nodes

Roots

- Fibrous, shallow

Preferred location:

- Damp shady moist areas, creekline, gardens

Dispersal:

- Dumping, water, fragmentation, gravity. Dispersal wholly vegetatively in Aust(GSID 2006)

Distribution:

- Widespread. Not easily burnt because of fleshy nature. Frost tender

Similar Species:

- *Commelina cyanea* (Scurvy Weed)

Note: - Can causes skin irritation on animals and humans  
- Numerous nursery trade cultivars

References:

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 20  
F.J & R.G Richardson, R.C.H Shepherd( 2006) *Weeds of the South-East* Pg15



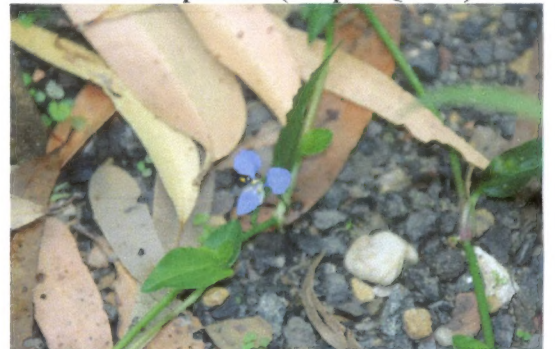
*Tradescantia fluminensis*



*Tradescantia fluminensis*



*Tradescantia pallida* (Purple Queen)



*Commelina cyanea*



*Tradescantia zebrina*



## **Profile Sheet**

Common Name:

## **Asparagus Fern, Ground(basket) Asparagus**

Botanical Name:

*Asparagus aethiopicus*

Family:

- Liliaceae/ Asparagaceae(Asparagus Family)

Status:

- Environmental Weed (South Africa orig)

Habit:

- Dense, prickly looking herb coming from a central crown

Life Cycle:

- Perennial (Monocot)

Flowering period:

- Winter, spring

Description:

- Perennial bushy, prostrate herb, <2m, arching stems with numerous "prickly leaves" coming from centre and masses of underground water tubers

Leaves

- Cladodes (modified stem), linear, needle like to 20mm at nodes, leaves reduced to bracts at cladode base

Flowers

- White, bell shaped on spike from leaf axil. 20 months after germination

Fruit

- Berry, <10mm, globular, green turning to red at maturity.

Stems

- Cord like, arising from rhizome

Roots

- Fibrous roots with rhizomes and tubers forming dense mats below ground

Preferred location:

- Drier parts of bushland, particularly sandy soils, closed or partial canopy

Dispersal:

- Garden dump, birds, water, rhizomes

Distribution:

- Widespread - Can dieback during hot summer but survives from tubers

Similar Species:

- Other *Asparagus* Spp.

References:

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 30

F.J & R.G Richardson, R.C.H Shepherd( 2006) *Weeds of the South-East* Pg39

A. Muyt (2001) *Bush Invaders of the South-East of Australia*. Pg123



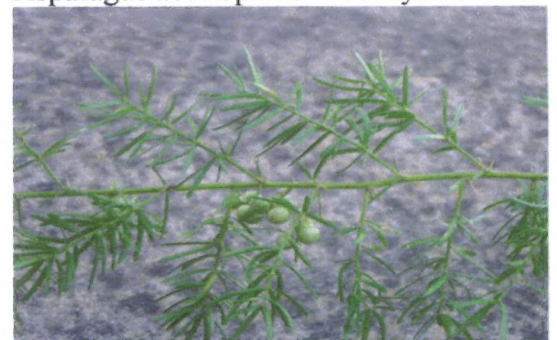
*Asparagus aethiopicus* - flowers



*Asparagus aethiopicus* - whole plant



*Asparagus aethiopicus* - root system



*Asparagus aethiopicus* – immature berries



## Profile Sheet

Common Name:

## Cobblers Peg, Pitchforks, Farmers Friend

- Botanical Name:**
- *Bidens pilosa*
  - *Bidens subalternans*
- Family:**
- Asteraceace (Daisy Family)
- Status:**
- Exotic
- Habit:**
- Erect annual herb
- Life Cycle:**
- Annual
- Flowering period:**
- Summer
- Description:**
- Erect herb to 1.5 m with opposite leaves and barbed fruit
- Leaves**
- Opposite
  - *B. pilosa*- oval, divided into 3-5 lance shaped segments with toothed margin (6-12 cm long)
  - *B. subalternans*- divides into leaflets that are either deeply or completely divided again. (11 cm long)
- Flowers**
- Yellow, terminal (grouped at top)
- Fruit**
- Black or dark brown, ribbed, 4 angled with a 2-3 barbed structure at end
- Stems**
- Erect, angular
- Roots**
- Shallow, fibrous
- Preferred location:**
- Disturbed areas, wasteland, roadsides, unstable bushland
- Dispersal:**
- Attachment to clothes, fur
- Distribution:**
- Widespread
- Similar Species:**
- *Sigesbeckia orientalis*(Indian Weed)

**References:**

B.A Auld and R.W Medd (1992) *Weeds: an illustrated botanical guide to the weeds of Australia* Pg 86

F.J & R.G Richardson, R.C.H Shepherd( 2006) *Weeds of the South-East* Pg119



*Bidens pilosa*



*Bidens pilosa*



*Sigesbeckia* (left)- *Bidens* (right)



*Bidens subalternans*



## Profile Sheet

Common Name:

## Blackberry Nightshade

Botanical Name:

*Solanum nigrum*

Family:

- Solanaceae (Nightshades)

Status:

- Environmental Weed (Origin – Eurasia)

Habit:

- Herb or small shrub to 1m

Life Cycle:

- Annual or short lived perennial

Flowering period:

- Spring - summer

Description:

- Erect or spreading herb/ shrub to 1m, white flowers with clusters of green then black berries

Leaves

- Alternate, ovate (4-7cm), green to purple, sometimes lobed margins, pointed tip, heavily veined

Flowers

- White (8-12mm), star shaped in clusters of 4-12, prominent yellow anthers, later becoming recurved

Fruit

- Berries (6-8mm) green then turning black/ purple when mature on down-turned stems (peduncles). Prolific seeder 20-35 seeds/ berry with high germination rates and staggered times

Stems

- Many branched with ridges, green to reddish, spreading, soft, easily broken

Roots

- Taproot with laterals

Preferred location:

- Moist well drained areas but will exist anywhere. Flowering occurs 5-9 weeks after germination until death

Dispersal:

- Water, birds

Distribution:

- Widespread

Similar Species:

-

Note – Berries and leaves contains glycol-alkaloid which causes gastroenteritis and haemolysis of red blood cells in stock. Rarely fatal. Toxic to children. Green berries and leaves used as ointment for external use – sores, wounds, rashes. Diuretic in small amounts

### References:

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 230  
F.J & R.G Richardson, R.C.H Shepherd (2006) *Weeds of the South-East* Pg 395  
Lamp. C & Collet. F (1993) *Weeds in Australia*. Pg 277



*Solanum nigrum*- Lady Beetle  
Biological control



*Solanum nigrum* - Habit



*Solanum nigrum* – Flowers & Fruit





## **Profile Sheet**

Common Name:

## **Spider Plant**

Botanical Name: *Chlorophytum comosum*

Family: - Liliaceae

Status: - Environmental Weed (Origin – South Africa)

Habit: - Tufted clump forming herb to 60cm

Life Cycle: - Perennial

Flowering period: - Summer

Description: - Clumping forming herb with tuberous roots and leafy plantlets on attached stems. Can form large colonies

Leaves - Narrow, linear (45cm), soft, strap like, folded, basal, sometimes variegated

Flowers - White to greenish (10mm) in spike-like cluster along outwards arching wiry stalks, 6 petals (tepals)

Fruit - Capsule, leathery, 3 sided containing flat black seeds

Stems - Long wiry stems up to 60cm that may have small leaves or flowers at end

Roots - Tuberous & rhizomes, fleshy to store water

Preferred location: - Shaded, humid areas but survives in most areas, easily propagated

Dispersal: - Dumping, leafy plantlets from the ends of wiry stems that make contact with the ground

Distribution: - Widespread, Common house plant, tolerates neglect

Similar Species: - Flax lily (*Dianella* Spp.) Leaves in one plane not radial

Note : - Studies have shown that spider plant is quite effective in cleaning indoor air by absorbing chemicals

### **References:**

F.J & R.G Richardson, R.C.H Shepherd ( 2006) *Weeds of the South-East* Pg38  
Harden Gwen (1993) *Flora of New South Wales*, Vol 4 pg 95



Spider Plant Mat



Flowers on variegated form



Leafy plantlets



*Dianella* – leaf plane



## **Profile Sheet**

Common Name:

## **Moth Vine, Moth Plant**

Botanical Name:

*Araujia sericifera*

Family:

- Asclepiadaceae

Status:

- Environmental weed (Origin – Brazil)

Habit:

- Twining, robust climber which exudes latex when broken

Life Cycle:

- Perennial

Flowering period:

- Summer

Description:

- Robust vine with opposite leaves, choko-like fruit with milky sap

Leaves

- Opposite, lance-shaped (10x5cm), green above, whitish/green below because of hairs

Flowers

- White to pale pink (25mm), 5 petals, bell shaped, clustered in upper leaf axil, slightly perfumed

Fruit

- Follicle (10x5cm), green-grey, choko like or pear-shaped, ribbed. Splits down one side when mature, releases dark brown, thin seeds which have attached tuft of hairs

Stems

- Robust, woody to 2 cm, latex inside. Climbs on other plants, fences etc.

Roots

- Shallow, woody

Preferred location:

- Disturbed lands- Damp fertile zones but survive most areas when established

Dispersal:

- Wind, water

Distribution:

- Widespread

Similar Species:

- *Parsonsia straminea* (Silkpod) pod like fruit, clear watery sap. Aerial roots with sucker pads

Notes- Sap a skin irritant, seeds-poisonous

### **References:**

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 78

F.J & R.G Richardson, R.C.H Shepherd (2006) *Weeds of the South-East* Pg108

A. Muyt (2001) *Bush Invaders of the South-East of Australia*. Pg121



Flowers and immature pod



Open mature pods



Seedling Moth Vine



## **Profile Sheet**

## **Madeira Vine**

Common Name:

Botanical Name: *Anredera cordifolia*

Family: - Basellaceae

Status: - Environmental/ Noxious weed  
(Origin – South Americas)

Habit: - Non-woody perennial, vigorous vine with warty aerial and below ground tubers

Life Cycle: - Perennial

Flowering period: - Autumn

Description: - Soft climbing vine to 20m with glossy fleshy leaves, aerial tubers and cream flowers in drooping cluster

Leaves - Alternate, < 12cm, oval/ heart shaped with wavy margin, glossy

Flowers - Small, cream, in long sprays (20cm) from leaf axil, fragrant

Fruit - Not known to produce viable seed/ fruit

Stems - Initially green turns red, cord like then rope like, soft firstly

Roots - Large (+20cm) ginger like tuber, fibrous

Preferred location: - Bushland, watercourses, rainforest edges

Dispersal: - Aerial tubers, underground tubers, water, garden escapes and dumping, nursery trade

Distribution: - Widespread

Similar Species: -

Notes - Aerial tubers may persist in the soil for 2-5 yrs (Muyt 2001) and on severed vines in the canopy for up to 5 yrs (Buchanan 1989). Readily sprouts from small vegetative parts. Difficult to kill once established. Huge aerial weight of plant destroys tree canopies.

References:

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 123  
F.J & R.G Richardson, R.C.H Shepherd (2006) *Weeds of the South-East* Pg167  
A. Muyt (2001) *Bush Invaders of the South-East of Australia*. Pg119



Anredera regrowth at ground



Anredera aerial tuber



Anredera curtain



Anredera flowers



## Profile Sheet

Common Name:

## Lantana

Botanical Name: *Lantana camara* (29+ biotypes naturalized)

Family: - Verbenaceae

Status: - Environmental/ Noxious  
WONS = (Weed of National Significance)  
One of *ten worst weeds worldwide*.

Habit: - Rambling thicket forming Shrub to 4m, prickly stems with numerous flower colours

Life Cycle: - Perennial

Flowering period: - Any time of year

Description: - Thicket forming, rambling shrub with weak woody square stems covered in curved prickly. Pungent when disturbed.

Leaves - Opposite, 3-10cm, toothed margin, prominent veins, rough, and odourous when crushed

Flowers - Dense cluster (20+) of individual 4 petal tubular flowers (4-8mm) forming heads 2-3 cm wide. Common colours pinks, reds, oranges, whites, yellows or mixtures. Flowers in each head open from the outside inwards.

Fruit - 1 seeded succulent berry (drupe), green then maturing to black/ purple

Stems - Woody, arching, square, armed with short curved prickles

Preferred location: - Riparian zone, bushland, neglected sites, frost free and fertile areas

Dispersal: - Birds, seeds, stem layering

Distribution: - Widespread

Similar Species: - *Trema tomentosa* var. *viridis* (Native Peach)

Note : - Numerous biological controls released (28) but only 4 having significant impact. Toxic to stock

### References:

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 234  
F.J & R.G Richardson, R.C.H Shepherd( 2006) *Weeds of the South-East* Pg403  
A. Muijt (2001) *Bush Invaders of the South-East of Australia*. Pg187



Lantana - flower colours



Lantana understorey



Lantana montevidensis



Scat with lantana berries





## Profile Sheet

Common Name:

## Small-leaf Privet

Botanical Name: *Ligustrum sinense*

Family: - Oleaceae

Status: - Environmental/ Noxious Weed  
(Origin – Asia)

Habit: - Evergreen shrub

Life Cycle: - Perennial

Flowering period: - Spring

Description: - Shrub to 4m, densely branched, evergreen with terminal fragrant flowers then clusters of black berries

Leaves - Opposite, paler below, oval, wavy margin, <7cm, soft hairs over veins and young stalks

Flowers - Terminal panicle, 4 petals, scented, white

Fruit - Drupe (berry-like) in clusters, green turning black, round, 4-6 mm, drooping at end of branches

Stems - Single or multi stemmed, lenticels present (raised spots on branches)

Preferred location: - Moist habitats- riparian zones, gullies, neglected areas, high nutrient run-off zones, drainage lines

Dispersal: - Seeds –Birds & animals, water, root suckering

Distribution: - Widespread, common

Similar Species: - *Syzygium* & *Acmena* Spp. (lilly pilly), *Backhousia myrtifolia* (Grey Myrtle) oil glands = scent, leaf venation run to edge

Notes - Popular as garden hedging  
- Leaves & fruits poisonous to humans and livestock  
- Allergic reaction when flowering in susceptible people

### References:

- B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 191  
F.J & R.G Richardson, R.C.H Shepherd( 2006) *Weeds of the South-East* Pg 320  
Muyt. A (2001) *Bush invaders of the South-East Australia* Pg 194-196

Flowers and wavy leaf margin



*Ligustrum sinense*- flowers & berries



*Ligustrum sinense*





## Profile Sheet

Common Name:

## Large-Leaf Privet

Botanical Name: *Ligustrum lucidum*

Family: - Oleaceae

Status: - Environmental Weed  
Noxious Weed (Origin – China/Japan)

Habit: - Small tree

Life Cycle: - Perennial –can live over 100 years

Flowering period: - Summer - Takes 4 years to flower.

Description: - Small evergreen tree producing masses of fragrant flowers then bunches of black berries

Leaves - Opposite, Dark green upper surface, lighter underside (10-4cm), Oval, tapering to point

Flowers - White, 4 petalled, scented, in terminal (panicle) clusters on branchlets

Fruit - Berry, 5-7mm, green then turning black, matures winter, viable for 1-2 years. Seed viability up to 98%

Stems - Smooth with lenticels (raised spots on stem), Suckers from damaged stems

Roots - Shallow, branching, woody, roots regrow from cut stumps

Preferred location: - Warm, humid, moist environments with increased nutrient sources

Dispersal: - Birds, water, dormancy of up to 2 years

Distribution: - Widespread, common garden plant

Similar Species: - Lilly Pilly (*Acmena smithii*). Grey Myrtle (*Backhousia myrtifolia*)

Notes : - Suspected of causing hayfever. Berries reported poisonous to humans and livestock

### References:

F.J & R.G Richardson, R.C.H Shepherd( 2006) *Weeds of the South-East* Pg319  
A. Muylt (2001) *Bush Invaders of the South-East of Australia*. Pg194



Habit



Fruit



Leaf & fruit



# Control of Small Hand-pullable Plants



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PARKS AND  
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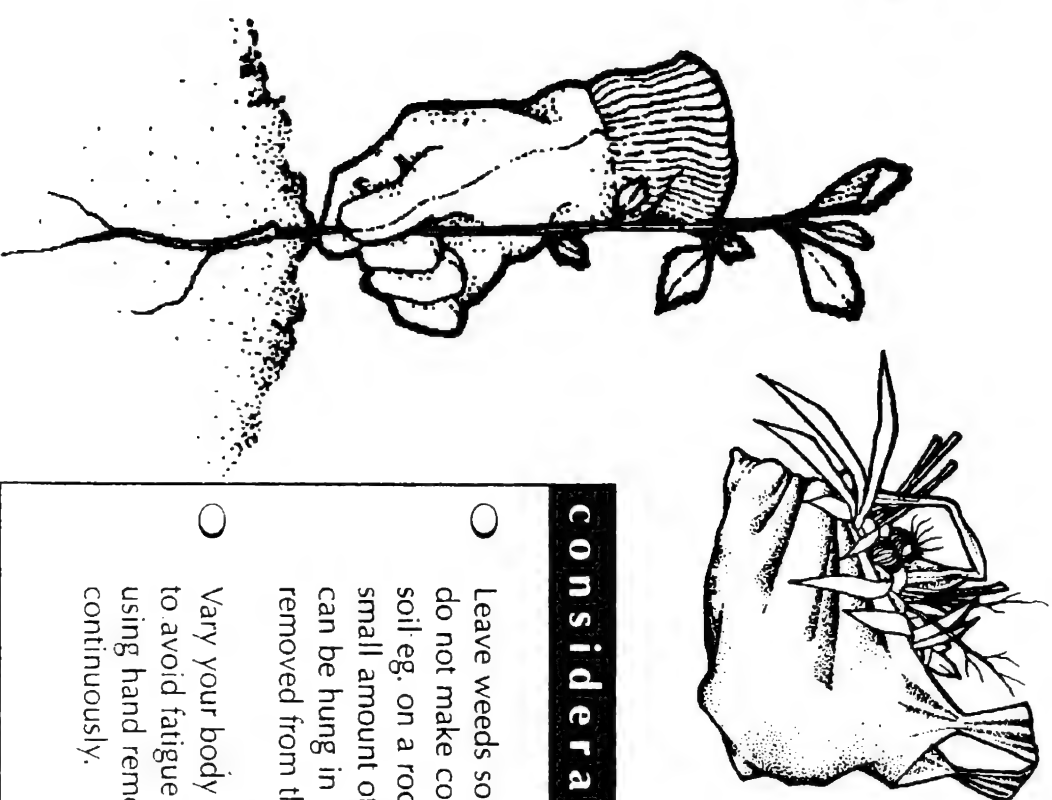
Australian  
Association  
of Bush  
Regenerators

- To Control:
- Small soft weeds eg. fleabane, crofton weed, small grasses
  - Seedlings of any weeds including privet, lantana, moth vine

## METHODS OF REMOVAL

### 1 HAND REMOVAL (*Minimal Disturbance*)

- STEP 1** Gently remove any seeds or fruits and carefully place into a bag.
- STEP 2** Grasp stem at ground level.
- STEP 3** Rock plant backwards and forwards to loosen roots, and pull out gently.
- STEP 4** Carefully tap the roots to dislodge any soil. Replace disturbed soil and pat down.



## considerations

- Leave weeds so that roots do not make contact with soil eg. on a rock - a small amount of debris can be hung in a tree or removed from the site.
- Vary your body position to avoid fatigue when using hand removal continuously.



# Control of Vines and Scramblers



NATIONAL TRUST

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SERVICEAustralian  
Association  
of Bush  
Regenerators

Illustrations: V. Bear

Examples of vines include: ● balloon vine, morning glory, honeysuckle, cape ivy, jasmine, madeira vine, blackberry

## METHODS OF REMOVAL

### 1 HAND REMOVAL

**STEP 1** Take hold of one runner and gently pull it along the ground towards you.

**STEP 2** Check points of resistance where fibrous roots grow from the nodes. Cut roots with a knife or dig out with a trowel and continue to follow the runner.

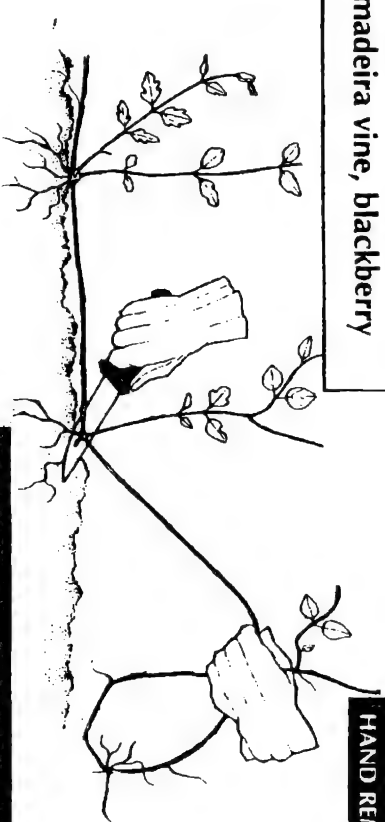
**STEP 3** The major root systems need to be removed manually or scrape/cut and painted with herbicide.

**STEP 4** Bag any reproductive parts.

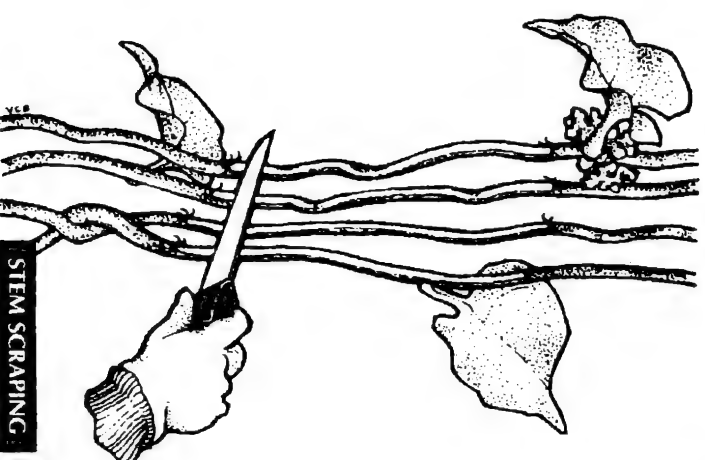
### 2 STEM SCRAPING

**STEP 1** With a knife, scrape 15 to 30 cm of the stem to reach the layer below the bark/outer layer.

**STEP 2** Immediately apply herbicide along the length of the scrape.



HAND REMOVAL



STEM SCRAPING

## considerations

- A maximum of half the stem diameter should be scraped. Do not ring bark.
- Larger stems (>1 cm) should have two scrapes opposite each other.
- Aerial tubers on madeira vine should die with the plant when stem scraping is used. Those that fall from the plant in the scraping process need to be bagged.
- Vines can be left hanging in trees after treatment.



# Control of Weeds with Underground Reproductive Structures



Examples: Weeds with

- Tap roots - catsear, dandelion
- Rhizomes - asparagus fern, ginger plant
- Bulbs and corms - oxalis, onion weed, watsonia, freesias, montbretia
- Tubers - madiera vine, arrow head vine

## METHODS OF REMOVAL

### 1 HAND REMOVAL OF PLANTS WITH A TAPROOT

Examples: Paddy's lucerne, dandelion

STEP 1

Gently remove and bag seeds or fruit.

STEP 2

Push a narrow trowel or knife into the ground next to the taproot. Carefully loosen soil. Repeat this step around the taproot.

STEP 3

Grasp stem at ground level, rock plant back wards and forwards and pull gently.

STEP 4

Gently tap the roots to dislodge soil. Replace disturbed soil and lightly pat down.

### 2 CROWNING (Many grasses can be crowned)

Example: asparagus fern

STEP 1

Gently remove and bag stems with seed or fruit.

STEP 2

Grasp the leaves or stems together so that the base of the plant is visible.

STEP 3

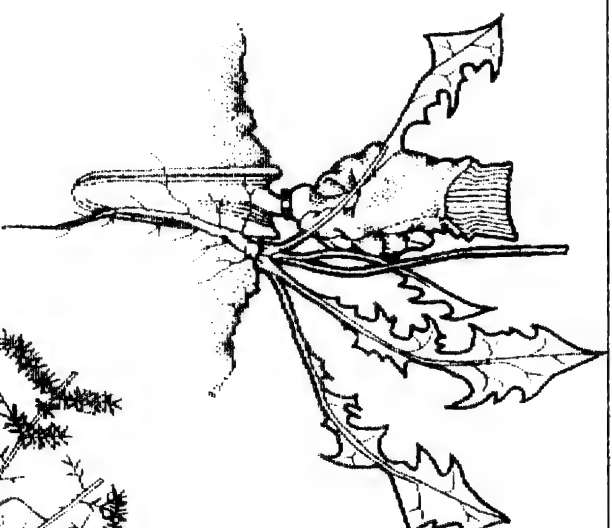
Insert, at an angle, a knife or lever, close to the "crown".

STEP 4

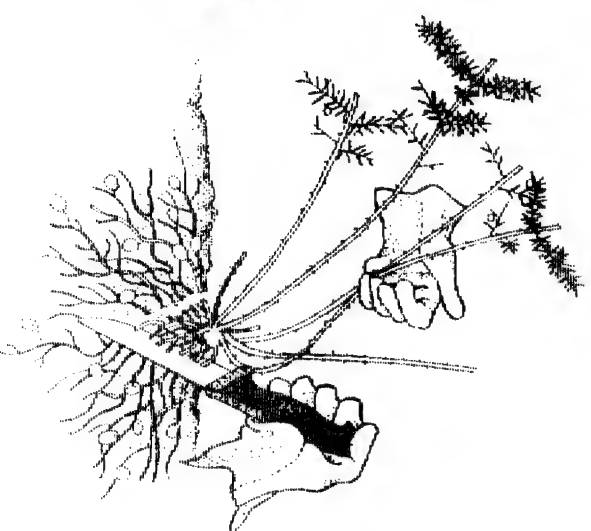
Cut through all the roots around the crown.

STEP 5

Remove and bag the crown.



HAND REMOVAL



CROWNING



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Association  
of Bush  
Regenerators



# Control of Weeds with Underground Reproductive Structures. cont..



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SERVICE



Australian  
Association  
of Bush  
Regenerators

Illustrations: V. Gear

## METHODS OF REMOVAL

### ③ REMOVAL OF PLANTS WITH BULBS, CORMS

#### OR TUBERS

Examples: onion weed, watsonia, arrowhead vine, montbretia

#### STEP 1

Move leaf litter away from base of plant.

#### STEP 2

Dig down next to the stem until the bulb or tuber is reached.

#### STEP 3

Remove plant and carefully bag the bulb or tuber.

### ④ HERBICIDE TREATMENT - STEM SWIPING

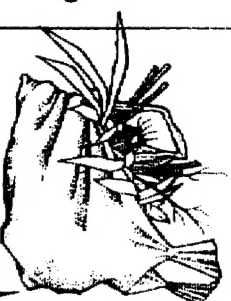
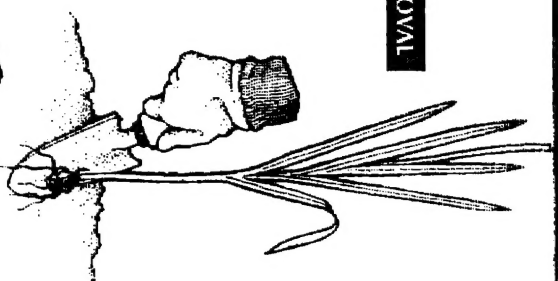
#### STEP 1

Gently remove any seed or fruit and carefully place into a bag.

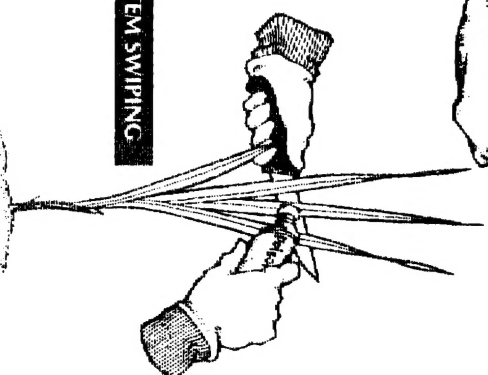
#### STEP 2

Using a herbicide applicator, swipe the stems/leaves.

#### HAND REMOVAL



#### STEM SWIPING



## considerations

- ☐ Further digging may be required for plants with more than one tuber (e.g. arrow head vine).
- ☐ Some bulbs (e.g. oxalis, onion weed) may have small bulbils attached or present in the soil around it. These need to be removed.
- ☐ It may be quicker and more effective to dig out the weed.
- ☐ Make sure native plants and seedlings will not be affected.
- ☐ Learn and understand how the herbicide works - for bulb and corm species the most effective time is after flowering and before fruit is set.
- ☐ Have you addressed all safety issues?



# Control of Woody Weeds



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Illustrations: V Bear

Examples of woody weeds include:

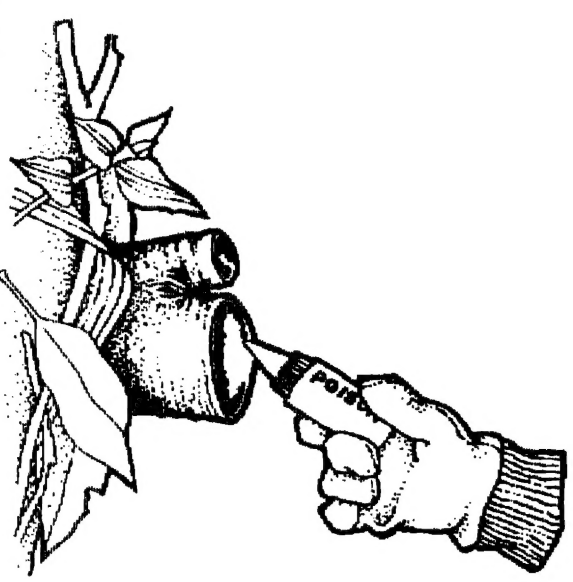
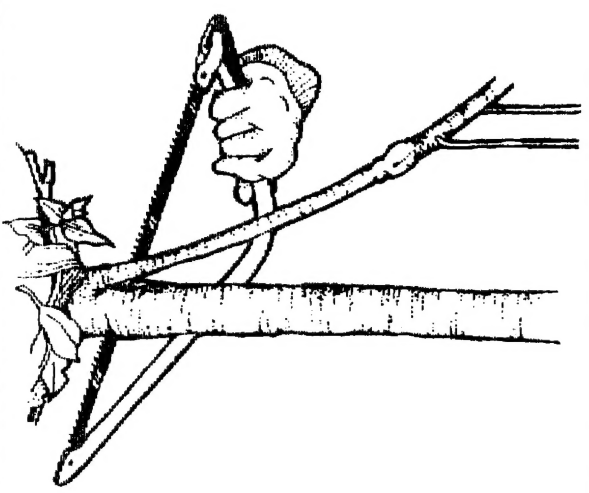
- lantana, bitou bush, cotoneaster, privet (cut and paint)
- camphor laurel, Mickey Mouse bush (ochra) and cassia/senna (stem scrape)

## METHODS OF REMOVAL

**1 CUT AND PAINT** —Useful for small to medium sized woody weeds up to 10cm basal diameter

**STEP 1**  
Make a horizontal cut as close to the ground as possible with secateurs, loppers or a bush saw.

**STEP 2**  
Immediately apply herbicide to the exposed flat stump surface.



## SAFETY CONSIDERATIONS

The following general precautions should be made when using herbicides:

- Read the label before opening the container and follow the instructions.
- Wear protective clothing as directed on the label.
- Wash hands after use and before eating or smoking.

## considerations

- Cuts should be horizontal to prevent herbicide from running off the stump. Sharp angle cuts are hazardous.
- Herbicide must be applied immediately before the plant cells close and translocation of herbicide ceases.
- If plants resprout, cut and paint the shoots after sufficient regrowth has occurred.
- Stem scraping can be more effective on some woody weeds.





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# Control of Woody Weeds cont..

## METHODS OF REMOVAL

### ② STEM INJECTION ③ FRILLING OR CHIPPING

For use on larger shrubs or trees above 10cm basal diameter and in inaccessible sites where removal is a problem.

#### STEP 1

**INJECTION:** At the base of the tree drill holes at a 45 degree angle into the sapwood at 5 cm intervals.

**OR**

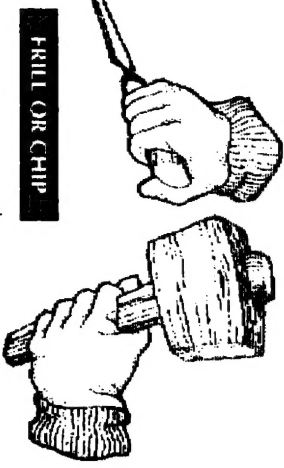
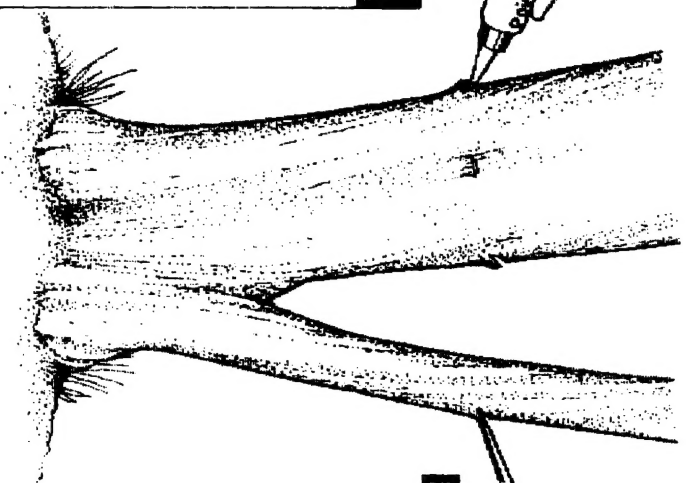
**FRILL/CHIP** Make a cut into the sapwood with a chisel or axe.

#### STEP 2

Fill each hole/cut with herbicide immediately.

#### STEP 3

Repeat the process at 5 cm intervals around the tree.



FRILL OR CHIP



INJECTION

## considerations

- Plants should be healthy and actively growing.
- Deciduous plants should be treated in spring and autumn when leaves are fully formed.
- For multi-stemmed plants, inject or chip below the lowest branch or treat each stem individually.
- Herbicide must be injected immediately before the plant cells close (within 30 seconds) and translocation of herbicide ceases.



Treatment	Advantages (Benefits)	Disadvantages (Limitations)	Treatment	Advantages (Benefits)	Disadvantages (Limitations)
<b>Manual Removal</b> e.g. <i>digging, hand-weeding</i>	<ol style="list-style-type: none"> <li>1. Selective</li> <li>2. Minimises disturbance</li> <li>3. Minimises risks to indigenous flora</li> <li>4. Supplements other methods</li> <li>5. Can prevent seeding and spread</li> <li>6. Effective on small infestations</li> <li>7. Develops identification skills</li> </ol>	<ol style="list-style-type: none"> <li>1. Can disturb soils</li> <li>2. Timing limitations</li> <li>3. Can spread weed propagules</li> <li>4. Unsuitable on large infestations</li> <li>5. Inappropriate on some weeds</li> <li>6. Labour intensive (costly)</li> </ol>			
<b>Herbicides</b> e.g. <i>sprays</i>	<ol style="list-style-type: none"> <li>1. Can be selective</li> <li>2. Can prevent seeding and spread</li> <li>3. Appropriate on small or large infestations</li> <li>4. Can decrease fuel loads</li> <li>5. Minimises soil disturbance</li> <li>6. Inexpensive</li> </ol>	<ol style="list-style-type: none"> <li>1. Can be non-selective</li> <li>2. Can damage or destroy indigenous flora</li> <li>3. Can increase fuel loads</li> <li>4. Potential impacts on the broader environment</li> <li>5. Technical proficiency required</li> <li>6. Operator/public hazards</li> </ol>			
<b>Woody Weed Treatments</b> e.g. <i>Cut-Paint, Drill-Fill, Filling, Ringbarking methods</i>	<ol style="list-style-type: none"> <li>1. Selective</li> <li>2. Minimises risks to indigenous flora</li> <li>3. Can result in large increases in light levels</li> <li>4. Can alter nutrient and moisture availability</li> <li>5. Reduces fuel loads</li> <li>6. Prevents seeding and vegetative spread</li> <li>7. Inexpensive (on small infestations)</li> </ol>	<ol style="list-style-type: none"> <li>1. Site disturbances can be excessive</li> <li>2. Can spread propagules</li> <li>3. Increased light levels/altered nutrient-moisture availability can favour weeds</li> <li>4. Potential for run-off/erosion</li> <li>5. Can destroy native fauna habitat</li> <li>6. Encourages weed growth/germination</li> <li>7. Operator/public hazards</li> <li>8. Costly and labour intensive</li> </ol>			
<b>Fire</b> e.g. <i>control burns, spot-burns, burning dried material</i>	<ol style="list-style-type: none"> <li>1. Selective (spot-burns)</li> <li>2. Removes excess foliage (for follow-up treatments)</li> <li>3. Supplements other methods</li> <li>4. Minimises risks to indigenous flora</li> <li>5. Encourages indigenous flora regeneration</li> <li>6. Encourages germination of soil-stored weed seedbank</li> <li>7. Inexpensive</li> </ol>	<ol style="list-style-type: none"> <li>1. Non-selective</li> <li>2. Usually does not eradicate weeds</li> <li>3. Inappropriate for non-fire adapted areas</li> <li>4. Seasonal and timing limitations</li> <li>5. Encourages weed growth/germination</li> <li>6. Altered nutrient-moisture availability can favour weeds</li> <li>7. Potential for run-off/erosion</li> <li>8. Fauna, people and property risks</li> <li>9. Specialist knowledge required</li> </ol>			
<b>Slashing, Mowing and Cutting</b> e.g. <i>brushcutters, mowers, slashers</i>	<ol style="list-style-type: none"> <li>1. Can be selective</li> <li>2. Minimises soil disturbance</li> <li>3. Minimises risks to indigenous flora</li> <li>4. Can prevent seeding/spread</li> <li>5. Removes excess foliage (for follow-up treatments)</li> <li>6. Supplements other methods</li> <li>7. Inexpensive</li> </ol>	<ol style="list-style-type: none"> <li>1. Often non-selective</li> <li>2. Usually does not eradicate weeds</li> <li>3. Can prevent indigenous flora seeding</li> <li>4. Can introduce and spread weed propagules</li> <li>5. Can encourage weed growth</li> <li>6. Can increase fuel loads (dried material)</li> <li>7. Can elevate nutrient levels</li> </ol>			
<b>Biological Control</b>	<ol style="list-style-type: none"> <li>1. Selective</li> <li>2. Can suppress growth and spread</li> <li>3. Supplements other methods</li> </ol>	<ol style="list-style-type: none"> <li>1. Timing limitations</li> <li>2. Variable results</li> <li>3. Does not eliminate weeds</li> </ol>			
			<b>Grazing</b> e.g. <i>goats, cows, sheep, horses</i>	<ol style="list-style-type: none"> <li>1. Can eradicate weeds</li> <li>2. Can remove excess foliage (for follow-up treatments)</li> <li>3. Supplements other methods</li> <li>4. Inexpensive</li> </ol>	<ol style="list-style-type: none"> <li>1. Non-selective</li> <li>2. Timing limitations</li> <li>3. Disturbs soils</li> <li>4. Encourages weed growth</li> <li>5. Often introduces weed propagules</li> <li>6. Inappropriate for many habitats</li> <li>7. Prevents indig.flora growth/regeneration</li> <li>8. Can elevate nutrient levels</li> <li>9. On-going management required</li> <li>10. Potential for run-off/erosion</li> <li>11. Aesthetics undermined</li> </ol>
			<b>Soil Cultivation and Scaping</b>	<ol style="list-style-type: none"> <li>1. Can eradicate weeds</li> <li>2. Reduces nutrient loads</li> <li>3. Removes soil-stored weed seedbank</li> <li>4. Can aid site rehabilitation</li> </ol>	<ol style="list-style-type: none"> <li>1. Non-selective</li> <li>2. Disturbs soils</li> <li>3. Spreads propagules</li> <li>4. Destroys indigenous flora/fauna habitat</li> <li>5. Removes soil-stored indigenous flora seedbank</li> <li>6. Potential for run-off/erosion</li> <li>7. Expensive</li> <li>8. Site rehabilitation required</li> <li>9. Technical proficiency required</li> </ol>
			<b>Mulches and Smothering Treatments</b>	<ol style="list-style-type: none"> <li>1. Inhibits weed growth</li> <li>2. Inhibits weed invasion</li> <li>3. Can complement site rehabilitation</li> <li>4. Erosion/run-off control</li> <li>5. Aesthetics enhanced</li> </ol>	<ol style="list-style-type: none"> <li>1. Usually non-selective</li> <li>2. Can encourage weed growth</li> <li>3. Prevents indig.flora growth/regeneration</li> <li>4. Can introduce weed propagules</li> <li>5. Can alter soil chemistry</li> <li>6. Affects soil, micro-flora and fauna</li> <li>7. On-going maintenance required</li> <li>8. Aesthetics undermined</li> <li>9. Costly and labour intensive</li> </ol>
			<b>Solarisation</b> e.g. <i>plastic sheeting</i>	<ol style="list-style-type: none"> <li>1. Can be selective</li> <li>2. Can control difficult-to-kill plants</li> <li>3. Inhibits/prevents seeding/spread</li> <li>4. Supplements other methods</li> <li>5. Appropriate on a small scale</li> <li>6. Low costs (once installed)</li> </ol>	<ol style="list-style-type: none"> <li>1. Usually non-selective</li> <li>2. Ineffective on many weeds</li> <li>3. Unsuitable for large infestations</li> <li>4. Prevents indigenous flora growth/regeneration</li> <li>5. Affects soil, micro-flora and fauna</li> </ol>
			<b>Competition Strategies and Practices</b> e.g. <i>direct seeding, plantings, natural recruitment</i>	<ol style="list-style-type: none"> <li>1. Suppresses weeds</li> <li>2. Can alter light levels and nutrient-moisture availability</li> <li>3. Restores vegetation structure</li> <li>4. Restores floristic diversity</li> <li>5. Enhances fauna habitat</li> </ol>	<ol style="list-style-type: none"> <li>1. Altered conditions can favour weeds</li> <li>2. Can undermine vegetation structure with inappropriate species selection</li> <li>3. Often entails intensive management input during establishment phase</li> <li>4. Can be labour intensive (costly)</li> <li>5. Specialist knowledge required</li> </ol>